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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,316	06/22/2001	Thomas R. Volpert JR.	5402/55434	9555

7590 05/26/2005

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EXAMINER	
HENNING, MATTHEW T	

ART UNIT	PAPER NUMBER
2131	

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/888,316	VOLPERT, THOMAS R.	
	Examiner	Art Unit	
	Matthew T. Henning	2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-10 and 21-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-10 and 21-61* is/are rejected.

7)☒ Claim(s) *52* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 June 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/7/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

This action is in response to the communication filed on 3/7/2005.

DETAILED ACTION

1. Claims 1-3, 5-10, and 21-61 have been examined. Claims 4, and 11-20 have been cancelled.

2. All objections and rejections not set forth below have been withdrawn.

Title

3. The title as amended is acceptable.

Priority

4. No claim for priority has been made for this application.

5. The effective filing date for the subject matter defined in the pending claims in this application is 06/22/2001.

Information Disclosure Statement

6. The information disclosure statement (IDS) submitted on 3/7/2005 was filed after the mailing date of the FAOM on 9/2/2004. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

7. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "assigning a value of 2 to n" of claims 38 and 53, the determining the 4 most frequent configurations and comparing the first with the sum of the third and fourth to determine the routine, of claims 39 and 54, the first routine encrypting and compressing while the second routine only encrypting, of claims 39 and

54, the encrypting of the encrypted string of claims 41 and 56, and the XOR encryption routine of claims 42 and 57, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

8. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

a. Claims 34 and 48 recite the limitation "generating an order via a random number generator".

b. Claims 37, 39, 52 and 54 recite a second position code routine where the position code is operable to encrypt the input without compression.

9. See the rejection of these claims under 35 USC 112 First Paragraph, for further explanation.

Claim Objections

10. Claim 52 is objected to because of the following informalities: Claim 52 contains multiple periods. One in line 9 and one in line 15.

11. Claim 52 further recites the limitation "the individual 2n different configurations" which should read "the individual 2^n different configurations". Appropriate correction is required.

Claim Rejections - 35 USC § 112

12. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

13. Claims 34, 37, 39-40, 48, 52 and 54-55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

14. Regarding claims 34 and 48, the limitation "generating an order via a random number generator" is not supported by the specification. Although there was disclosure that the control code could be generated in a random fashion, there was no description of how the order could be generated by a random number generator (See Specification Page 18 Paragraph 3). As such, it is

unclear whether applicant had possession of the invention in which the order was generated via a random number generator. Therefore, claims 34, and 48 are rejected for failing to meet the written description requirement of 35 USC 112 1st Paragraph.

15. Regarding claims 37, 39, 52, and 54, the limitation of a second position code routine in which encryption but not compression was performed on the data is not supported by the specification. Although the specification did disclose that the invention could be used for "encryption and/or compression" (See Specification Page 2 Paragraph 2), and further disclosed choosing between two different position code routines (See Specification Page 8 Paragraph 2). However, the specification fails to disclose that any of the position code routines do not perform compression but do perform encryption. As such, it is unclear whether the applicant had possession of the invention in which one of the position code routines did not perform compression but did perform encryption. Therefore, claims 37, 39, 52, and 54 are rejected for failing to meet the written description requirement of 35 USC 112 1st Paragraph.

16. Claims 40 and 55 are rejected by virtue of their dependency to claims 39, and 54 respectively.

17. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

18. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 recites the limitation "the control code index" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> *A person shall be entitled to a patent unless –*
>
> *(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

20. Claims 1-3, 5, 8-10, 47, 49-52, and 59-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Cellier et al (US Patent Number 5,884,269) hereinafter referred to as Cellier.

21. Regarding claim 1, Cellier disclosed a method for encrypting an input data string comprising a plurality of bits of binary data, the method comprising: determining an order in which 2n different configurations of n bits are to be identified in a position code (See Cellier Col. 2 Paragraph 3 and Col. 4 Paragraph 4 wherein the order is determined by the frequency of each sample, and the order is the best table of Cellier); generating a control code associated with the determined order (See Cellier Fig. 1 Element 103 and Col. 4 Paragraph 4 and Col. 13 Paragraph 4 wherein the control code is the "table select" field of Cellier); generating a position code indicating the position of 2^n different configurations of n bits in an input data string in accordance with the determined order (See Cellier Fig. 1 Element 106 and Col. 4 Paragraph 4 – Col. 5 Paragraph 1) ; and combining the control code and the position code to form an encrypted data string (See Cellier Fig. 7 Table Select and Elements 707.1-707.N).

22. Regarding Claim 2, Cellier disclosed that generating a control code comprises generating a control code in response to a control code index (See Cellier Fig. 1 Element 104 and Col. 4 Paragraph 4 wherein the control code index was the table dictionary).

23. Regarding Claim 3, Cellier disclosed that determining an order comprises selecting a predetermined order (See Cellier Col. 4 Paragraph 4 Lines 4-8 and Cellier Col. 13 Paragraph 2).

24. Regarding Claim 5, Cellier disclosed dividing the input data string into a plurality of blocks of data (See Cellier Fig. 1 Element 101 and Detailed Description Paragraph 1).

25. Regarding Claim 8, Cellier disclosed generating a plurality of block codes associated with a plurality of blocks of data, each block code indicating the number of bits within the associated block of data (See Cellier Fig. 7 Block Length and Col. 12 Paragraph 3).

26. Regarding Claim 9, Cellier disclosed combining the each of the plurality of block codes with the control code and the position code for the associated block of data (See Cellier Fig. 7 Block Length and Col. 12 Paragraph 3).

27. Regarding claim 10, Cellier disclosed that determining an order comprises determining an order based on the frequencies of the 2^n combinations of the n bits of the input data string (See Cellier Col. 7 Paragraph 6 – Col. 8 Paragraph 2).

28. Regarding claim 47, Cellier disclosed that determining an order further comprises determining an order in which 2^n different configurations of n bits are to be identified in a position code based on an analysis of the input data string (See Cellier Col. 7 Paragraph 6 – Col. 8 Paragraph 2 wherein the analysis is the frequency analysis using the bins).

29. Regarding claim 49, Cellier disclosed that determining an order comprises generating an order using a mathematical formula (See Cellier Col. 8 Paragraph 2 and Fig. 4 Especially Step 408).

30. Regarding claim 50, Cellier disclosed that determining an order further comprises determining a first order associated with a first block of data and determining a second order associated with a second block of data wherein the first order is different than the second order (See Cellier Col. 7 Paragraph 6 wherein it was disclosed that the best table was determined for each frame).

31. Regarding claim 51, Cellier disclosed determining whether the input data string can be compressed simultaneously as it is encrypted (See Cellier Col. 12 Paragraph 5 – Col. 13 Paragraph 7).

32. Regarding claim 52, Cellier disclosed dividing the input string into successive n bit sequences (See the rejection of 5 above); comparing each of the 2n different configurations of n bits with each of the successive n bit sequences (See Cellier Col. 7 Paragraph 6 – Col. 8 Paragraph 2); determining the frequency of each of the 2n different configurations appearing in the input data string (See Cellier Col. 7 Paragraph 7 – Col. 8 Paragraph 1); determining whether a specific relationship exists between values of the frequencies of each of the individual 2^n different configurations appearing in the input date string (See Cellier Col. 8 Paragraph 2 and Col. 12 Paragraph 5 – Col. 13 Paragraph 2); selecting a first position code routine associated with the determined order when the specific relationship exists, the first position code being operable to encrypt and compress the input data string (See Cellier Col. 12 Paragraph 5 - Col. 13 Paragraph 1); and selecting a second position code routine associated with the determined order when the specific relationship does not exist, the second position code being operable to encrypt the input data string without any compression (See Cellier Col. 13 Paragraphs 1-2).

33. Regarding claim 59, Cellier disclosed that selecting a predetermined order comprises selecting a default order (See Cellier Col. 13 Paragraph 2).

34. Regarding claim 60, Cellier disclosed that determining an order based on the frequencies of the 2n combinations of the n bits of the input data string comprises determining an order based on the relative frequencies of the 2n combinations of the n bits of the input data string (See Cellier Col. 8 Paragraph 2).

35. Regarding claim 61, Cellier disclosed determining an order based on the frequencies of the 2n combinations of the n bits of the input data string comprises determining a pre-determined order based on the frequencies of the 2n combinations of the n bits of the input data string (See Cellier Col. 8 Paragraph 2 wherein the dictionary contained tables that were predetermined).

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> *(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

37. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cellier as applied to claim 5, and further in view of Shimizu et al. (US Patent Number 6,772,343) hereinafter referred to as Shimizu.

Cellier disclosed blocking the input data into block sizes of a certain range (See Cellier Fig. 1 Element 101 and Detailed Description Paragraph 1) but failed to disclose determining the size of the blocks randomly or mathematically.

Shimizu teaches that in a block encoding system, generating each block size randomly makes illicit access of the data more difficult and makes the cryptosystem more robust (See Shimizu Col. 5 Lines 9-18). Shimizu further teaches that the random sizes are generated mathematically using a seed (See Shimizu Col. 15 Paragraphs 3-7).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Shimizu in the invention of Cellier to mathematically generate random block lengths. This would have been obvious because the ordinary person skilled in the art would have been motivated to provide the added security of random block lengths to the encoded audio.

38. Claims 21-26, 29-33, 35-37 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cellier, and further in view of Schneier ("Applied Cryptography").

Cellier disclosed generating control codes and using the control codes to generate position codes (See rejection of claims 1-3, 5, 8-10, 47, 49-52, and 59-61 above), but Cellier failed to disclose that the method for doing so was implemented as a computer readable medium.

Schneier teaches that any encoding algorithm can be implemented in software, with advantages in flexibility, portability, ease of use, and ease of upgrade (See Schneier Page 225 Paragraph 7). Schneier further teaches that software encoding programs are popular and available for all operating systems (See Schneier Page 225 Paragraph 8).

It would have been obvious to the ordinary person skilled in the art to employ the teachings of Schneier to the compression encoding method of Cellier in order to provide a software program to compress audio data. This would have been obvious because the ordinary person skilled in the art would have been motivated to provide a compression method that was flexible, portable, easy to use and easy to upgrade.

39. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cellier as applied to claim 1 above, and further in view of Witten et al. ("On the Privacy Afforded by Adaptive Text Compression"), hereinafter referred to as Witten.

Cellier disclosed determining the table (order) to be used during the coding in an arithmetic coding scheme (See Cellier Col. 7 Paragraph 6 – Col. 8 Paragraph 2), but failed to disclose the table being generated by a random number generator.

Witten teaches that in an arithmetic coding scheme, a random number generator can be used to determine the order (initial model) of the coding scheme (See Witten Page 405 Col. 1 Paragraph 1).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Witten in the arithmetic coding system of Cellier by providing the table through a random number generator. This would have been obvious because the ordinary person skilled in the art would have been motivated to protect the audio data from illicit access.

40. Claims 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cellier as applied to claim 1.

Regarding claim 53, Cellier disclosed there being 2^n different combinations (See Cellier Col. 6 Paragraph 5 – Col. 7 Paragraph 1), but failed to disclose specifically that there were 4 different combinations. Cellier did however disclose that there could be adapted to any quantization value 'n' (See Cellier col. 6 Line 66 – Col. 7 Line 3).

It would have been obvious to the ordinary person skilled in the art at the time of invention to have 4 different combinations (i.e. 2^2). This would have been obvious because the ordinary person skilled in the art would have been motivated to adapt the system of Cellier to any 2^n number of combinations as disclosed by Cellier, and to decrease the size of the tables.

41. Regarding claim 54, Cellier disclosed dividing the input data string into successive n bit sequences (See Cellier Detailed Description Paragraph 1); comparing each of the 2^n different configuration of n bits with each of the successive n bit sequences of the input string (See Cellier Col. 7 Paragraph 7 – Col. 8 Paragraph 1); determining a first number representative of the number of times the most frequently occurring 2^n configuration appears in the input string', determining a second number representative of the number of times the second most frequently occurring 2^n configuration appears in the input string; determining a third number representative of the number of times the third most frequently occurring 2^n configuration appears in the input string determining a fourth number representative of the number of times the fourth most frequently occurring 2^n configuration appears in the input string (See Cellier Col. 7 Paragraph 7 – Col. 8 Paragraph 1); selecting a first position code routine associated with the determined order when the first number is greater than the sum of the third number and the fourth number, the first position code routine being operable to encrypt and compress the input data string (See Cellier Col. 12 Paragraph 5 – Col. 13 Paragraph 1); and selecting a second position code routine

associated with the determined order when the first number is not greater than the sum of the third number and the fourth number, the second position code routine being operable to encrypt the input data string without any compression (See Cellier Col. 13 Paragraph 1-2).

42. Regarding claim 55, Cellier disclosed that generating a control code associated with the determined order, further comprises: generating a first control code associated with the determined order when the first position code routine is selected; and generating a second control code associated with the determined order when the second position code routine is selected wherein the first control code is different than the second control code (See Cellier Col. 12 Paragraph 5 – Col. 13 Paragraph 2).

43. Claims 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cellier as applied to claim 1 above, and further in view of Weiss (US Patent Number 5,479,512).

Cellier disclosed arithmetic coding the audio input using Huffman Coding (See Cellier Col. 7 Paragraph 6 – Col. 8 Paragraph 2), but failed to disclose re-encrypting the data after the arithmetic coding was performed.

Weiss teaches that after compression is performed, the compressed data should be XORed with a key, in small blocks at a time (See Weiss Col. 5 Paragraphs 4-5 and Col. 6 Paragraph 3 and Fig. 3A).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Weiss in the Huffman Coding system of Cellier by XORing the coded data with a key in small blocks at a time. This would have been obvious because the ordinary person skilled in the art would have been motivated to protect the data from unauthorized observing.

44. Claims 56, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cellier as applied to claim 1 above, and further in view of Butler et al. (US Patent Number 5,861,887) hereinafter referred to as Butler.

Cellier disclosed arithmetic coding the audio input using Huffman Coding (See Cellier Col. 7 Paragraph 6 – Col. 8 Paragraph 2), but failed to disclose re-encrypting the data after the arithmetic coding was performed.

Butler teaches that compression should be repeated as many times as necessary in order to make the data being compressed sufficiently small (See Butler Col. 3 Paragraph 2).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Butler in the Huffman Coding system of Cellier by repeating the Huffman Coding on the coded output as many times as necessary to get the output to be sufficiently small. This would have been obvious because the ordinary person skilled in the art would have been motivated to provide more efficient storage of the audio data.

45. Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Cellier and Schneier as applied to claim 26 above, and further in view of Shimizu.

The combination of Cellier and Schneier disclosed a computer readable medium with software for blocking the input data into block sizes of a certain range (See Cellier Fig. 1 Element 101 and Detailed Description Paragraph 1) but failed to disclose determining the size of the blocks randomly or mathematically.

Shimizu teaches that in a block encoding system, generating each block size randomly makes illicit access of the data more difficult and makes the cryptosystem more robust (See

Shimizu Col. 5 Lines 9-18). Shimizu further teaches that the random sizes are generated mathematically using a seed (See Shimizu Col. 15 Paragraphs 3-7).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Shimizu in the combination of Cellier and Schneier to mathematically generate random block lengths. This would have been obvious because the ordinary person skilled in the art would have been motivated to provide the added security of random block lengths to the encoded audio.

46. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Cellier and Schneier as applied to claim 23 above, and further in view of Witten.

The combination of Cellier and Schneier disclosed a computer readable medium with software for determining the table (order) to be used during the coding in an arithmetic coding scheme (See Cellier Col. 7 Paragraph 6 – Col. 8 Paragraph 2), but failed to disclose the table being generated by a random number generator.

Witten teaches that in an arithmetic coding scheme, a random number generator can be used to determine the order (initial model) of the coding scheme (See Witten Page 405 Col. 1 Paragraph 1).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Witten in the arithmetic coding system of Cellier and Schneier by providing the table through a random number generator. This would have been obvious because the ordinary person skilled in the art would have been motivated to protect the audio data from illicit access.

47. Claims 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Cellier and Schneier as applied to claim 23 above.

Regarding claim 38, the combination of Cellier and Schneier disclosed there being 2^n different combinations (See Cellier Col. 6 Paragraph 5 – Col. 7 Paragraph 1), but failed to disclose specifically that there were 4 different combinations. Cellier did however disclose that there could be adapted to any quantization value 'n' (See Cellier col. 6 Line 66 – Col. 7 Line 3).

It would have been obvious to the ordinary person skilled in the art at the time of invention to have 4 different combinations (i.e. 2^2). This would have been obvious because the ordinary person skilled in the art would have been motivated to adapt the system of Cellier and Schneier to any 2^n number of combinations as disclosed by Cellier and to further decrease the size of the tables.

48. Regarding claim 39, the combination of Cellier and Schneier disclosed dividing the input data string into successive n bit sequences (See Cellier Detailed Description Paragraph 1); comparing each of the 2^n different configuration of n bits with each of the successive n bit sequences of the input string (See Cellier Col. 7 Paragraph 7 – Col. 8 Paragraph 1); determining a first number representative of the number of times the most frequently occurring 2^n configuration appears in the input string', determining a second number representative of the number of times the second most frequently occurring 2^n configuration appears in the input string; determining a third number representative of the number of times the third most frequently occurring 2^n configuration appears in the input string determining a fourth number representative of the number of times the fourth most frequently occurring 2^n configuration appears in the input string (See Cellier Col. 7 Paragraph 7 – Col. 8 Paragraph 1); selecting a first

position code routine associated with the determined order when the first number is greater than the sum of the third number and the fourth number, the first position code routine being operable to encrypt and compress the input data string (See Cellier Col. 12 Paragraph 5 – Col. 13 Paragraph 1); and selecting a second position code routine associated with the determined order when the first number is not greater than the sum of the third number and the fourth number, the second position code routine being operable to encrypt the input data string without any compression (See Cellier Col. 13 Paragraph 1-2).

Regarding claim 40, Cellier disclosed that generating a control code associated with the determined order, further comprises: generating a first control code associated with the determined order when the first position code routine is selected; and generating a second control code associated with the determined order when the second position code routine is selected wherein the first control code is different than the second control code (See Cellier Col. 12 Paragraph 5 – Col. 13 Paragraph 2).

49. Claims 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Cellier and Schneier as applied to claim 23 above, and further in view of Weiss (US Patent Number 5,479,512).

The combination of Cellier and Schneier disclosed arithmetic coding the audio input using Huffman Coding (See Cellier Col. 7 Paragraph 6 – Col. 8 Paragraph 2), but failed to disclose re-encrypting the data after the arithmetic coding was performed.

Weiss teaches that after compression is performed, the compressed data should be XORed with a key, in small blocks at a time (See Weiss Col. 5 Paragraphs 4-5 and Col. 6 Paragraph 3 and Fig. 3A).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Weiss in the Huffman Coding system of Cellier and Schneier by XORing the coded data with a key in small blocks at a time. This would have been obvious because the ordinary person skilled in the art would have been motivated to protect the data from unauthorized observing.

50. Claims 41, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Cellier and Schneier as applied to claim 23 above, and further in view of Butler et al. (US Patent Number 5,861,887) hereinafter referred to as Butler.

The combination of Cellier and Schneier disclosed arithmetic coding the audio input using Huffman Coding (See Cellier Col. 7 Paragraph 6 – Col. 8 Paragraph 2), but failed to disclose re-encrypting the data after the arithmetic coding was performed.

Butler teaches that compression should be repeated as many times as necessary in order to make the data being compressed sufficiently small (See Butler Col. 3 Paragraph 2).
It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Butler in the Huffman Coding system of Cellier and Schneier by repeating the Huffman Coding on the coded output as many times as necessary to get the output to be sufficiently small. This would have been obvious because the ordinary person skilled in the art would have been motivated to provide more efficient storage of the audio data.

Response to Arguments

51. Applicant's arguments filed 3/7/2005 have been fully considered but they are not persuasive. Applicant argues primarily that:

i. Cellier does not disclose "determining an order in which 2^n different configurations of n bits are to be identified in a position code".

ii. Cellier does not disclose "generating a position code reflecting the position of the 2^n different configurations of n bits of an input data string in accordance with the determined order".

iii. Cellier disclosed the process of Cellier "suffer[s] form practical problems of low coding efficiency for 'frames' over 2048 samples or below 512 samples".

52. Regarding the applicant's argument i., that Cellier does not disclose "determining an order in which 2^n different configurations of n bits are to be identified in a position code", the examiner has considered the argument and does not find the argument persuasive. Cellier disclosed that upon analysis of the input string, the frequency of which samples occurred in the input string was determined (See Cellier Col. 7 Paragraph 7 – Col. 8 Paragraph 1). These frequencies are used to determine which Huffman table, the table which provides each sample with a new code with the most frequent samples receiving the smallest codes and the least frequent receiving the largest (See Cellier Col. 4 Line 65 – Col. 5 Line 5 and Col. 6 Lines 16-24), will be provide the minimum compression cost, or the smallest compressed data frame (See Cellier Col. 8 Paragraph 2). As such, the frequencies, from highest to lowest, provide the order in which the different samples will be identified, from smallest to largest. Therefore, the examiner does not find the argument persuasive.

53. Regarding the applicant's argument ii, that Cellier does not disclose "generating a position code reflecting the position of the 2^n different configurations of n bits of an input data string in accordance with the determined order", the examiner has considered the argument and

has not found it persuasive. Cellier clearly disclosed generating a position code which identifies where the samples occurred in the input by identifying the sample in the input and encoding it with the corresponding codeword in the selected Huffman table (See Cellier Col. 5 Paragraph 1). Further, because the table was chosen in accordance with the frequencies and the order of samples from most frequent to least frequent was reflected in the table (See the arguments of the previous paragraph), the generating of the position code using the table was in accordance with the determined order. As such, the examiner does not find the argument persuasive.

54. Regarding the applicant's argument iii, that Cellier disclosed the process of Cellier "suffer[s] form practical problems of low coding efficiency for 'frames' over 2048 samples or below 512 samples", the examiner has considered the argument persuasive. This is because the statement by Cellier is irrelevant. The coding efficiency has nothing to do with the claim limitations and therefore this argument is not persuasive.

55. Because the applicant's arguments were not found to be persuasive, the examiner has maintained the rejections presented above, with respect to the independent claims. Further, the rejections of the dependant claims above have been maintained as well because the response to applicant's arguments apply to the arguments against the dependant claims as well.

Conclusion

56. Claims 1-3, 5-10, and 21-61 have been rejected.

57. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(1) Mayers et al. (US Patent Number 5,532,694) disclosed a data compression apparatus using Huffman encoding in which the generated Huffman table is prepended to the compressed encoded data.

58. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

59. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew T. Henning whose telephone number is (571) 272-3790. The examiner can normally be reached on M-F 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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5/18/2005

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